CLAIMS

1. A semiconductor device comprising:

a silicon substrate; and

a cobalt silicide film formed on said silicon substrate,

wherein the principal surface of said silicon substrate which is in contact with said cobalt silicide film is an Si (111) plane, and the principal surface of said cobalt silicide film which is in contact with said Si (111) plane is a $CoSi_2$ (111) plane.

2. A semiconductor device according to claim 1, wherein the ratio of nickel or iron to cobalt in the cobalt silicide film is 0.05 to 50 atomic %.

3. A process for producing a semiconductor device comprising the steps of:

forming a gate electrode on a silicon substrate;

forming a diffusion layer(s) on said silicon substrate;

forming a cobalt film in contact with the upper side of at least said gate electrode or said diffusion layer(s);

depositing at least a nickel film or an iron film on said cobalt film; and

forming a cobalt silicide film on at least said gate electrode or said diffusion layer(s).

4. The process according to claim 3, wherein the concentration of nickel or iron is 0.05 to 50 atomic % based on cobalt.